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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,552	10/24/2003	Sang-Hoon Shin	249/393	7505

27849 7590 11/17/2008

LEE & MORSE, P.C.
3141 FAIRVIEW PARK DRIVE
SUITE 500
FALLS CHURCH, VA 22042

EXAMINER	
LLOYD, EMILY M	

ART UNIT	PAPER NUMBER
3736	

MAIL DATE	DELIVERY MODE
11/17/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/691,552	SHIN ET AL.	
	Examiner	**Art Unit**	
	EMILY M. LLOYD	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _14 August 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-19_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-19_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _24 October 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Applicant's 14 August 2008 amendment. The Examiner acknowledges Applicant's amendments to claims 1, 12, and 15. Currently, claims 1-19 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 12-14, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mapping Acupuncture Points Using Multi Channel Device (Kwok et al.) as modified by United States Patent 6014583 (Nakagawara et al.).

Regarding claim 12, Kwok et al. disclose a method of acquiring a local skin impedance (Method heading in left column of page 69, skin resistance map Figure 4 page 72), comprising: (a) applying steady electrical conditions to the skin for a predetermined time period (120 seconds, page 69 Method paragraph 1 line 16); (b) positioning a multi-channel electrode having a plurality of measurement sensors (flat-ended pins act as electrodes page 69 Hardware Design paragraph 1 line 3) parallel to the region to be measured (multi-channel probe in Figure 3 page 71); and (c) applying the steady electrical conditions and measuring skin impedance at the region to be measured (page 69 Hardware Design paragraph 1 lines 25-30 and line 36; the region to be measured is where the multi-channel probe is located Figure 3).

Kwok et al. disclose the claimed invention except for the steps of (a) disposing two electrodes of a constant current source on opposite sides of a region to be measured on a patient's skin and applying a predetermined constant current to the skin through the two electrodes; and (c) applying the predetermined constant current between the two electrodes of the constant current source and measuring impedance while the predetermined constant current flows through the region to be measured. Nakagawara et al. teach the use of the steps of (a) disposing two electrodes (electrodes

24 Figure 3) of a constant current source (constant current source 22 Figure 3) on opposite sides of a region to be measured on a patient's skin (electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3) and applying a predetermined constant current to the skin through the two electrodes (Column 3 lines 30-42); and (c) applying the predetermined constant current between the two electrodes of the constant current source (Column 3 lines 30-42 and Figure 3) and measuring impedance while the predetermined constant current flows through the region to be measured (Column 3 lines 30-62, also Column 5 lines 39-50 and Column 6 lines 15-23 and 37-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such steps of (a) disposing two electrodes of a constant current source on opposite sides of a region to be measured on a patient's skin and applying a predetermined constant current to the skin through the two electrodes; and (c) applying the predetermined constant current between the two electrodes of the constant current source and measuring impedance while the predetermined constant current flows through the region to be measured as taught by Nakagawara et al. to measure skin impedance in the invention of Kwok et al. because this would provide a well known alternative to measure impedance with Ohm’s Law.

Regarding claim 13, Kwok et al. as modified by Nakagawara et al. teach that the multi-channel electrode comprises: a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area (Kwok et al. “precise 16x16 square grid pattern” page 69 Method paragraph 1 line 2 and “8 cm by 8 cm” page 69 Hardware Design paragraph 1 line 6).

Regarding claim 14, Kwok et al. as modified by Nakagawara et al. teach that the measurement pressure is adjusted depending on a curvature of the region to be measured during measurement of skin impedance (Kwok et al. page 69 Method paragraph 1 lines 2-5).

Regarding claim 17, Kwok et al. as modified by Nakagawara et al. teach a computer readable medium having embodied therein a computer program (Kwok et al. “computer software developed for the probe” page 70 Software Design paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19; see also Nakagawara et al. entire reference, including claim 1) for the method of claim 12 (see 103 rejection of claim 12 above).

Regarding claim 18, Kwok et al. as modified by Nakagawara et al. teach a computer readable medium having embodied therein a computer program (Kwok et al. “computer software developed for the probe” page 70 Software Design paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19; see also Nakagawara et al. entire reference, including claim 1) for the method of claim 14 (see 103 rejections of claims 12 and 14 above).

6. Claims 1, 2, 4, 5, 7-11, 15, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Nakagawara et al. as applied to claims 12-14, 17 and 18 above, and further in view of United States Patent Publication 2002/0062090 (Chai et al.).

Regarding claim 1, Kwok et al. as modified by Nakagawara et al. disclose an apparatus for measuring local skin impedance, comprising: a multi-channel electrode

(Kwok et al. multi-channel probe page 36 Hardware Design paragraph 1 line 1) including a plurality of measurement sensors (Kwok et al. flat-ended pin acting as an electrode page 69 Hardware Design paragraph 1 line 3) on an electrode surface (Kwok et al. electrode array page 69 Hardware Design paragraph 1 line 4) having a predetermined area (Kwok et al. 8 cm by 8 cm page 69 Hardware Design paragraph 1 line 6); a channel selector (Kwok et al. multiplexers page 69 Hardware Design paragraph 1 lines 9-23) configured to select each of the channels included in the multi-channel electrode according to a channel control signal (Kwok et al. page 70 Software Design paragraph 1 lines 12-13); a constant current source (Nakagawara et al. constant current source 22 Figure 3) configured to apply a predetermined constant current to first and second regions (electrodes 24 Figure 3 and Column 3 lines 30-42), the first and second regions being disposed on opposite sides of a region to be measured (electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3); a preprocessing unit configured to filter a potential value measured at each of the channels in the region to be measured (Kwok et al. page 69 Method paragraph 2 line 4, also Nakagawara et al. filter 41 Figure 3), the region to be measured being disposed between the first and second regions (Nakagawara et al. electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3), while the predetermined constant current is flowing through the region to be measured (Nakagawara et al. Column 3 line 30-Column 4 line 9); an analog-to-digital converter configured to convert the potential value output from the preprocessing unit into a digital signal (Kwok et al. page 70 Software Design paragraph 1 line 14); and a control unit configured to generate the

channel control signal, to process the digital signal output from the analog-to-digital converter, and to control the apparatus (Kwok et al. PC (page 70 Software Design paragraph 1 line 19) running computer software (page 70 Software Design paragraph 1 lines 4-5 and lines 12-16), see also page 69 Method paragraph 2 lines 1-6).

Kwok et al. as modified by Nakagawara et al. teach the claimed invention except for an amplifier. Chai et al. teach the use of an amplifier (differential amplifier 80 Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such an amplifier as taught by Chai et al. to amplify the signals in the invention of Kwok et al. as modified by Nakagawara et al. because it is well known in the art to amplify electrical signals.

Regarding claim 2, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the plurality of measurement sensors is arranged in a matrix shape on the electrode surface (Kwok et al. “precise 16 x 16 square grid pattern” page 69 Method paragraph 1 line 2).

Regarding claim 4, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the multi-channel further comprises twenty-five (25) measurement sensors arranged in a 5x5 matrix (Kwok et al. a 5x5 matrix is comprised in a 16x16 matrix, page 69 Method paragraph 1 line 2).

Regarding claim 5, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that a pressure applied to each of the measurement sensors is adjusted depending on a curvature of the region to be measured during measurement of skin impedance (Kwok et al. page 69 Method paragraph 1 lines 2-5).

Regarding claim 7, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the constant current source comprises: a positive electrode and a negative electrode (Nakagawara et al. electrodes 24 Figure 3), which are attached to a location on skin centering around the region to be measured (Nakagawara et al. electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3) such that the positive and negative electrodes are separated from the region to be measured by a predetermined distance (Nakagawara et al. distances between electrodes in Figure 3), and the predetermined constant current output from the constant current source is applied to the skin through the positive electrode, then output from the skin through the negative electrode, and then flows back in the constant current source (Nakagawara et al. Figure 3 and Column 3 lines 30-42).

Regarding claim 8, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the preprocessing unit comprises: a differential amplifier (Chai et al. differential amplifier 80 Figure 1) and a filter (Kwok et al. page 69 Method paragraph 2 line 4).

Regarding claim 9, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach the use of a low pass filter (Chai et al. low pass filter (LPF) 100 Figure 1). Kwok et al. as modified by Nakagawara et al. and Chai et al. do not teach the specific cut-off frequency or the specific type of filter. However, a Butterworth filter with a cutoff frequency of 4 Hz is a well-known low pass filter. Applicant has not disclosed that having the cutoff frequency at any specific number of Hertz within the low filter range and the filter being a Butterworth filter solves any stated problem or is for any particular

purpose. Moreover, it appears that the filter of Kwok et al. as modified by Nakagawara et al. and Chai et al., or applicant's invention, would perform equally well with a low pass filter with a different low frequency cutoff and a different low pass filter type.

Accordingly, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have modified Kwok et al. as modified by Nakagawara et al. and Chai et al. such that the cutoff frequency was set at 4 Hz or less and the filter was a Butterworth filter because such a modification would have been considered a mere design consideration which fails to patentably distinguish over Kwok et al. as modified by Nakagawara et al. and Chai et al.

Regarding claim 10, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the control unit comprises: a personal computer configured to control the apparatus (Kwok et al. PC page 70 Software Design paragraph 1 line 19); and a signal processor configured to generate the channel control signal and express the potential values acquired at each of the channels of the multi-channel electrode (Kwok et al. page 70 Software Design paragraph 1 lines 22-24) as a two-dimensional impedance distribution and a three-dimensional impedance distribution under a control of the personal computer (Kwok et al. Figure 4 is a two-dimension impedance distribution, which shows the same data displayed in a three-dimensional impedance distribution with the degree of shading representing the third axis orthogonal to the paper. The data values used to represent the shading in a two-dimensional distribution are the same values used to represent the three-dimensional curves and shading on a three-dimensional impedance distribution. It would have been obvious to display the data

used in the two-dimensional distribution of Figure 4 of Kwok et al. in a three-dimensional distribution because different plots give people different views (and thus highlight different aspects) of the same data; see also Nakagawara et al. Figures 6a-6d, and the consideration for time series data Column 5 lines 14-16, and claim 1).

Regarding claim 11, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the signal processor is configured to analyze and perform a measurement generally performed by an instrument such as an oscilloscope using the personal computer (Kwok et al. “computer software developed for the probe” page 70 Software Design paragraph 1 line 4; Kwok et al. page 70 Software Design paragraph 1 lines 22-24).

Regarding claim 15, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach a method of measuring local skin impedance (Kwok et al. Method heading in left column of page 69, skin resistance map Figure 4 page 72), comprising: measuring a potential value (Kwok et al. page 69 Method paragraph 1 lines 10-14) at each of a plurality of channels (Kwok et al. “all 256 pins” page 69 Method paragraph 1 line 16) included in a multi-channel electrode (Kwok et al. multi-channel probe” page 69 Hardware Design paragraph 1 line 1) disposed between two electrodes of a constant current source (Nakagawara et al. voltage detection matrix 32 is disposed between electrodes 24 Figure 3), wherein the constant current source is configured to apply a predetermined constant current to a patient's skin through the two electrodes (Nakagawara et al. constant current source 22 and electrodes 24 Figure 3, and Column 3 lines 30-42), the multi-channel electrode includes a plurality of measurement sensors

(Kwok et al. flat-ended pins act as electrodes page 69 Hardware Design paragraph 1 line 3), the two electrodes are disposed on opposite sides of a region to be measured (Nakagawara et al. electrodes 24 are on opposite sides of the voltage detection matrix 32 Figure 3), and the measurement is performed while the predetermined constant current is flowing through the region to be measured (Nakagawara et al. Column 3 lines 30-62); amplifying (Chai et al. differential amplifier 80 Figure 1) and filtering the potential value at each channel (Kwok et al. page 69 Method paragraph 2 line 4); converting the filtered potential value from an analog format into a digital format (Kwok et al. page 70 Software Design paragraph 1 lines 13-16); and analyzing the potential value in the digital format and displaying the results of the analysis in a form of a spatial impedance distribution in two and three dimensions (Kwok et al. page 70 Software Design paragraph 1 lines 22-24 and paragraph 2 lines 1-12, also Figure 4, additionally see the discussion of spatial impedance distributions in different dimensions in the 103 rejection of claim 10 above).

Regarding claim 16, Kwok et al. as modified by Nakagawara et al. and Chai et al. teach that the multi-channel electrode comprises: a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area (Kwok et al. “precise 16x16 square grid pattern” page 69 Method paragraph 1 line 2 and “8 cm by 8 cm” page 69 Hardware Design paragraph 1 line 6).

Regarding claim 19, Kwok et al. as modified by Nakagawara et al. and Chai et al. disclose a computer readable medium having embodied therein a computer program (Kwok et al. “computer software developed for the probe” page 70 Software Design

paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19; see also Nakagawara et al. entire reference, including claim 1) for the method of claim 16 (see 103 rejection of claim 16 above).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Nakagawa et al. and Chai et al. as applied to claims 1, 2, 4, 5 and 7-19 above, and further in view of United States Patent 4517983 (Toyosu et al.).

Regarding claim 3, Kwok et al. as modified by Nakagawa et al. and Chai et al. teach that the measurement sensors are pin electrodes made of a metal conductor (Kwok et al. “stainless steel flat-ended pin acting as an electrode” page 69 Hardware Design paragraph 1 lines 2-3). Kwok et al. as modified by Nakagawa et al. and Chai et al. do not teach that the measurement sensors include a spring. Toyosu et al. teach the use of measurement sensors that include a spring (coil spring 13 Figure 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such a spring in the measurement sensors as taught by Toyosu et al. to maintain constant contact and pressure with the area being measured in the invention of Kwok et al. as modified by Nakagawara et al. and Chai et al. because to provide the predictable result of ensuring that all the electrodes are in contact with the body surface (Toyosu et al. Column 2 lines 27-29) even if the device is turned or upside down (coil springs 13 would keep pin contacts 5N in contact with the body).

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Nakagawara et al. and Chai et al. as applied to claims 1, 2, 4, 5 and

7-19 above, and further in view of The design and fabrication of a micro-thermal/pressure-sensor for medical electro-skin application (Ho).

Regarding claim 6, Kwok et al. as modified by Nakagawara et al. and Chai et al. disclose the claimed invention except for the multi-channel electrode comprising a micro-electro-mechanical system (MEMS) electrode. Ho teaches the use of a micro-electro-mechanical system (MEMS) electrode (page 1205 Introduction paragraph 2 lines 1-7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such a micro-electro-mechanical system (MEMS) electrode as taught by Ho to take measurements in the invention of Kwok et al. as modified by Nakagawara et al. and Chai et al. because this would make the device smaller and able to be used on smaller areas and to better pinpoint acupuncture points.

Response to Arguments

9. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMILY M. LLOYD whose telephone number is (571)272-2951. The examiner can normally be reached on Monday through Friday 8:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emily M Lloyd

Examiner
Art Unit 3736

/EML/

/Max Hindenburg/
Supervisory Patent Examiner, Art Unit 3736